

## TRANSMITTAL LETTER TO THE UNITED STATES

DESIGNATED/ELECTED OFFICE (DO/EO/US)

CONCERNING A FILING UNDER 35 U.S.C. 371

International Application. No.

PCT/FR98/01817

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August 19, 1997

Title of Invention: COSMETIC COMPOSITION CONTAINING A POLYMER AQUEOUS DISPERSION AND A DISILANOL SILICONE

Applicants For DO/EO/US: 1) Christine DUPUIS and 2) Christiane CONDRAMINE

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. [X] This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. [ ] This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. [ ] This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. [X] A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. [X] A copy of the International Application as filed (35 U.S.C. 371(c)(2))
  - a. [ ] is transmitted herewith (required only if not transmitted by the International Bureau).
  - b. [X] has been transmitted by the International Bureau.
  - c. [ ] is not required, as the application was filed in the United States Receiving Office (RO/US).
6. [X] A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. [X] Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)).
  - a. [ ] are transmitted herewith (required only if not transmitted by the International Bureau).
  - b. [ ] have been transmitted by the International Bureau.
  - c. [ ] have not been made; however, the time limit for making such amendments has NOT expired.
  - d. [X] have not been made and will not be made.
8. [ ] A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. [ ] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. [ ] A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

11. [ ] An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. [ ] An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. [ ] A FIRST preliminary amendment.
14. [ ] A SECOND or SUBSEQUENT preliminary amendment.
15. [ ] A substitute specification.
16. [ ] A change of power of attorney and/or address letter.
16. [ ] Other items or information:
  - a. [ ] Verified Small Entity Statement.
  - b. [ ] Copy of Notification of Missing Requirements.

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17. [X] The following fees are submitted:

CALCULATIONS

## Basic National Fee (37 CFR 1.492(a)(1)-(5)):

Search Report has been prepared by the EPO or JPO.....\$840.00  
 International preliminary examination fee paid to  
 USPTO (37 CFR 1.482).....\$670.00  
 No international preliminary examination fee paid to  
 USPTO (37 CFR 1.482) but international search fee  
 paid to USPTO (37 CFR 1.445(a)(2)).....\$690.00  
 Neither international preliminary examination fee  
 (37 CFR 1.482) nor international search fee  
 (37 CFR 1.445(a)(2)) paid to USPTO.....\$970.00  
 International preliminary examination fee paid to USPTO  
 (37 CFR 1.482) and all claims satisfied provisions  
 of PCT Article 33(1)-(4).....\$ 96.00

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ENTER APPROPRIATE BASIC FEE AMOUNT =

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Surcharge of \$130.00 for furnishing the oath or declaration later than  
 [ ] 20 [ ] 30 months from the earliest claimed priority date  
 (37 CFR 1.492(e)).

\$

Claims	Number Filed	Number Extra	Rate	
Total Claims	17-20=	0	X \$18.00	\$
Independent Claims	1 - 3=	0	X \$78.00	\$
Multiple dependent claim(s) (if applicable)			+\$260.00	\$260.00

TOTAL OF ABOVE CALCULATIONS =

\$1100.00

Reduction by 1/2 for filing by small entity, if applicable. Verified  
 Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28)

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 (37 CFR 1.492(f)).

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TOTAL NATIONAL FEE =

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The Commissioner is hereby authorized to charge any other fees due under 37 C.F.R. \$1.16  
 or \$1.17 during the pendency of this application to our Deposit Account No. 06-0916.

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COSMETIC COMPOSITION COMPRISING AN AQUEOUS POLYMER  
DISPERSION AND A SILICONE DISILANOL EMULSION AND  
PROCESS

The invention relates to an aqueous or  
5 aqueous/alcoholic cosmetic composition comprising an  
aqueous dispersion of insoluble particles of film-  
forming polymer and a non-aminated silicone  
 $\alpha,\omega$ -disilanol emulsion. The invention also relates to a  
process for the cosmetic treatment of keratinous  
10 substances using these compositions.

For some years, very particular interest has  
been displayed in the preparation of essentially  
aqueous hair cosmetic compositions. This is because the  
use of alcohol, such as ethanol or isopropanol, alone  
15 or as a mixture with a small proportion of water, can  
exhibit certain disadvantages, in particular an  
increase in flammability when the composition is in the  
form of an aerosol lacquer.

More generally still, the aim is to reduce  
20 the use of compounds which are volatile at atmospheric  
pressure, known as VOC (Volatile Organic Compounds),  
which are present in cosmetic compositions. VOC are  
mainly propellants and certain solvents, such as  
ethanol.

25 Attempts have been made, in order to decrease  
the amount of VOC, to replace solvents such as ethanol  
by water. However, while the majority of water-soluble

film-forming polymers can, in solution in water, result in the production of hair fixing compositions, these compositions exhibit major disadvantages. Thus, essentially aqueous compositions of these polymers do not make it possible to obtain high degrees of fixing. Provision has certainly been made to use these water-soluble polymers at high concentrations but the increase in concentration causes such an increase in the viscosity of the compositions that satisfactory spraying can only be obtained with great difficulty. Even if correct spraying is obtained, these aqueous compositions exhibit a particularly lengthy drying time in comparison with alcohol compositions and are thus of little practical interest.

Provision has also been made to use aqueous dispersions of insoluble particles of polymers instead of polymers dissolved in aqueous, alcoholic or aqueous/alcoholic compositions.

However, to date, the results obtained are still unsatisfactory. This is because, while the fixing power is sufficient and the drying time is acceptable, the cosmetic properties are still unsatisfactory. In particular, the disentangling, softness and feel properties are unsatisfactory. Furthermore, it is difficult to remove the polymer during washing of the hair with a shampoo.

Attempts have already been made to improve the cosmetic properties of cosmetic compositions comprising a polymer dispersion without decreasing the fixing power by adding a non-functionalized silicone oil or polyoxyalkylenated silicone, but the Applicant Company has found that, in contrast to what was expected, the properties, such as disentangling, softness and feel, are not improved and are even, in some cases, debased.

10           The Applicant Company has now discovered that a cosmetic composition comprising, in a cosmetically acceptable medium, an aqueous dispersion of insoluble polymer particles and a non-aminated silicone  $\alpha,\omega$ -disilanol emulsion made it possible to overcome the  
15           disadvantages described above.

These compositions thus exhibit a good fixing power and good cosmetic properties, such as disentangling, softness and feel. It is easy to style or blow dry the hair after application.

20           The compositions according to the invention make it possible to obtain good spraying, the spray is even and the sprayed drops are fine. The compositions are distributed easily over the whole of the hair. Furthermore, surprisingly, the fixing power of the  
25           compositions is not decreased by the addition of a silicone. Finally, the drying times are low.

The subject-matter of the present invention is thus a cosmetic composition comprising, in a cosmetically acceptable medium, an aqueous dispersion of insoluble particles of polymer and a non-aminated  
5 silicone  $\alpha,\omega$ -disilanol emulsion.

The compositions according to the invention exhibit, in addition to the abovementioned advantages, good resistance to moisture, good removal on shampooing and on blow drying, and a good rate of drying.

10 However, other characteristics, aspects or advantages of the invention will become still more fully apparent on reading the detailed description which will follow and the concrete but in no way limiting examples intended to illustrate it.

15 The aqueous dispersions of insoluble particles of non-ionic or ionic polymer which can be used according to the invention are generally obtained by suspension or emulsion polymerization or copolymerization of monomers according to processes  
20 well known in the state of the art (such dispersions are also known under the name of "latex"). It is also possible to obtain aqueous dispersions of polymers by dissolving the said polymer in a water-miscible organic solvent, water is then added and, finally, the organic  
25 solvent is evaporated. This type of preparation is, for example, disclosed in French Application No. 2,697,160.

The mean diameter of the insoluble particles of polymer is generally less than 500 nm and preferably less than 250 nm. The glass transition temperature of the polymer is generally between -30EC and 150EC and  
5 preferably between 10 and 90EC.

The dispersions generally comprise at least 0.5% of surfactant making possible the dispersing and the maintenance in dispersion of the insoluble polymer. According to the invention, any type of surfactant can  
10 be used but preferably a non-ionic surfactant.

The polymer of the aqueous dispersion comprises at least one monomer chosen, for example, from styrene, butadiene, ethylene, tetrafluoroethylene, propylene, vinyltoluene, vinyl propionate, vinyl  
15 alcohol, acrylonitrile, chloroprene, vinyl chloride, vinyl acetate, urethanes, isoprene, polyols, diisocyanates, triisocyanates, isobutene, vinyl ethers, vinylpyrrolidone, vinylimidazole, trimethylammonioethyl (meth)acrylate, acrylic or methacrylic, maleic,  
20 crotonic or itaconic acids, their esters or their amides, and their mixtures.

The non-ionic polymers in the aqueous dispersions which can be used according to the present invention are, for example, chosen from the following  
25 compounds

- vinyl acetate homopolymers, such as the product provided under the name of Appretan EM by the company

Hoechst or the product provided under the name of Rhodopas A 012 by the company Rhône-Poulenc;

- copolymers of vinyl acetate and of acrylic ester, such as the product provided under the name of Rhodopas

5 AD 310 from Rhône-Poulenc;

- copolymers of vinyl acetate and of ethylene, such as the product provided under the name of Appretan TV by the company Hoechst;

- copolymers of vinyl acetate and of maleic ester, for  
10 example of dibutyl maleate, such as the product provided under the name of Appretan MB Extra by the company Hoechst;

- vinyl chloride homopolymers, such as the products provided under the names of Geon 460X45, Geon 460X46  
15 and Geon 577 by the company Goodrich;

- polyethylene waxes, such as the products provided under the names Aquacer 513 and Aquacer 533 by the company Byk Cera;

- polyethylene/polytetrafluoroethylene waxes, such as  
20 the products provided under the names Drewax D-3750 by the company Drew Ameroid and Wax Dispersion WD-1077 by the company R.T. Newey;

- copolymers of polyethylene and of maleic anhydride;

- homopolymers of alkyl acrylates and homopolymers of  
25 alkyl methacrylates, such as the product provided under the name Micropearl RQ 750 by the company Matsumoto or



- copolymers of acrylic esters, such as, for example, copolymers of alkyl acrylates and of alkyl

10 N 9212;

- copolymers of acrylonitrile and of a non-ionic monomer chosen, for example, from butadiene and alkyl (meth)acrylates; mention may be made of the products provided under the names Nipol LX 531 B by the company

15 Nippon Zeon or those provided under the name CJ 0601 B  
by the company Rohm & Haas;

- styrene homopolymers, such as the product Rhodopas 5051 provided by the company Rhône-Poulenc;

- copolymers of styrene and of alkyl (meth)acrylate, such as the products Mowilith LDM 6911, Mowilith DM 611 and Mowilith LDM 6070 provided by the company Hoechst, the products Rhodopas SD 215 and Rhodopas DS 910 provided by the company Rhône-Poulenc or the product Uramul SC 70 provided by the company DSM;

25 - copolymers of styrene, of alkyl methacrylate and of  
alkyl acrylate, such as the product Daitisol SPA  
provided by the company Wackherr;

- copolymers of styrene and of butadiene, such as the products Rhodopas SB 153 and Rhodopas SB 012 provided by the company Rhône-Poulenc;
- copolymers of styrene, of butadiene and of vinyl-  
5 pyridine, such as the products Goodrite SB Vinylpyridine 2528X10 and Goodrite SB Vinylpyridine 2508 provided by the company Goodrich;
- copolymers of styrene and of vinylpyrrolidone, such as the products Antara 450 and Cloud 285 provided by  
10 the company ISP;
- polyurethanes, such as the products provided under the names Acrysol RM 1020 or Acrysol RM 2020 by the company Rohm & Haas or the products [lacuna] Uraflex XP 401 UZ or Uraflex XP 402 UZ by the company  
15 DSM Resins;
- copolymers of alkyl acrylate and of urethane, such as the product 8538-33 [lacuna] by the company National Starch;
- polyamides, such as the product Estapor LO 11  
20 provided by the company Rhône-Poulenc.

The dispersions of insoluble particles of cationic polymer comprise, for example, the following polymers:

- copolymers of acrylamide and of trimethylammonioethyl  
25 (meth)acrylate;
- copolymers of alkyl methacrylate, of alkyl acrylate and of trimethylammonioethyl (meth)acrylate, such as

the product Eudragit RL 30 D provided by the company Rohm Pharma.

The aqueous dispersions of insoluble particles of polymer which are particularly preferred  
5 in the context of the invention are aqueous dispersions of insoluble particles of anionic polymers.

According to the invention, it is possible, for example, to use an aqueous dispersion comprising a copolymer formed of an alkyl acrylate, of alkyl  
10 methacrylate and of one or more ethylenic carboxylic acids having from 3 to 5 carbon atoms, the alkyl radicals having from 1 to 5 carbon atoms.

The alkyl acrylate is preferably chosen from methyl acrylate, ethyl acrylate, propyl acrylate and  
15 butyl acrylate. Ethyl acrylate is particularly preferred.

The alkyl acrylate concentration is preferably between 40 and 70% by weight and more particularly between 50 and 60% by weight with respect to the total weight of  
20 the copolymer.

The alkyl methacrylate is preferably chosen from methyl methacrylate, ethyl methacrylate, propyl methacrylate and butyl methacrylate. Methyl methacrylate is particularly preferred.

25 The alkyl methacrylate concentration is preferably between 30 and 50% by weight and more particularly

between 30 and 40% by weight with respect to the total weight of the copolymer.

The preferred ethylenic carboxylic acids are acrylic acid, methacrylic acid, crotonic acid, itaconic acid or their mixtures. Acrylic acid and methacrylic acid are particularly preferred. According to the invention, it is possible to employ salts of these carboxylic acids.

The concentration of ethylenic carboxylic acids or of their salts is preferably between 5 and 15% by weight and more particularly between 8 and 12% by weight with respect to the total weight of the copolymer.

In a particularly preferred embodiment of the invention, acrylic acid is used with methacrylic acid, each in a concentration of between 2 and 10% by weight, the total of these two acids not exceeding 15% by weight of the total weight of the copolymer.

The copolymer can also comprise small amounts, that is to say less than 10%, preferably less than 5% and more particularly less than 2%, of a polymerizable monomer other than those mentioned above.

According to a particularly preferred embodiment of the invention, use is made of a copolymer comprising from 50 to 60% by weight of ethyl acrylate, from 30 to 40% by weight of methyl methacrylate, from 2 to 10% by weight of acrylic acid and from 2 to 10% by

weight of methacrylic acid, the total concentration of acrylic and methacrylic acid not exceeding 15% by weight with respect to the total weight of the acrylic copolymer.

5           Such a copolymer is, for example, disclosed in Patent Application EP-A 590,604, which is here included here by way of reference.

          An aqueous dispersion of the acrylic copolymer described above comprising 25% by weight of  
10 an ethyl acrylate/methyl methacrylate/methacrylic acid/acrylic acid copolymer is sold in particular under the tradename Amerhold DR-25 by the company Amerchol.

          According to the invention, it is also possible to use an aqueous dispersion of hydroxyethyl  
15 methacrylate/methyl methacrylate/methacrylic acid/butyl acrylate copolymers, such as, for example, the product sold by the company Seppic under the name Acudyne 255.

          According to the invention, it is also possible to use an aqueous dispersion of ethyl  
20 acrylate/methacrylic acid/t-butyl acrylate copolymers, such as, for example, the product sold by the company BASF under the name Luvimer Low Voc.

          According to the invention, it is also possible to use an aqueous dispersion of methyl  
25 methacrylate/acrylic acid/butyl acrylate copolymers, such as, for example, the product sold by the company National Starch under the name Balance 055.

The concentration by weight of the particles of insoluble polymer in the compositions according to the invention is preferably between 1 and 35% with respect to the total weight of the composition,  
5 preferably between 5 and 20% by weight.

The emulsions comprising non-aminated silicone  $\alpha,\omega$ -disilanol which can be used in the context of the present invention can be chosen from all those already known per se.

10 According to the invention, non-aminated silicone  $\alpha,\omega$ -disilanol denotes any silicone not comprising at least one primary, secondary or tertiary amine or one quaternary ammonium group.

The mean size of the silicone particles in  
15 the emulsion is preferably between 1 and 10 microns and more particularly between 10 nm and 1 micron.

The emulsions which can be used according to the invention can be microemulsions, that is to say thermodynamically stable emulsions.

20 The emulsions are generally aqueous and comprise, in addition to water and the non-aminated silicone  $\alpha,\omega$ -disilanol, one or more surfactants. These surfactants can be of any type and more particularly of non-ionic or cationic type.

25 Thus, according to the present invention, it is possible to use any silicone  $\alpha,\omega$ -disilanol known per se, whether it is a silicone oil, a silicone resin

or even a silicone gum. Silicones are organosilicon polymers or oligomers with a branched or crosslinked, linear or cyclic structure, of variable molecular weight, obtained by polymerization and/or

- 5 polycondensation of suitably functionalized silanes and essentially composed of a repetition of main units in which the silicon atoms are connected to one another via oxygen atoms (siloxane bond), optionally substituted hydrocarbon radicals being directly bonded
- 10 via a carbon atom to the said silicon atoms. The commonest hydrocarbon radicals are alkyl radicals and in particular the methyl radical, fluoroalkyl radicals, aryl radicals and in particular the phenyl radical, and alkenyl radicals and in particular the vinyl radical;
- 15 other types of radicals capable of being bonded, either directly or via a hydrocarbon radical, to the siloxane chain are in particular hydrogen, halogens and in particular chlorine, bromine or fluorine, thiols, alkoxy radicals, polyoxyalkylene (or polyether)
- 20 radicals and in particular the polyoxyethylene and/or polyoxypropylene radical, hydroxyl or hydroxyalkyl radicals, acyloxy or acyloxyalkyl radicals, or anionic groups, such as carboxylates, thioglycolates, sulphosuccinates, thiosulphates, phosphates and
- 25 sulphates, this list, of course, being in no way limiting (so-called "organomodified" silicones). The number-average molecular weight of the silicones which

can be used according to the invention can vary between 100 and several million, preferably between 1000 and 1,000,000. According to the present invention, it is possible, of course, either to use one and the same  
5 silicone or to employ several different silicones.

These silicones can be crosslinked.

Mention may in particular be made, as examples of silicones which can be used in the compositions according to the invention, of  
10 polydialkylsiloxane  $\alpha,\omega$ -disilanol, polyalkylaryl-siloxane  $\alpha,\omega$ -disilanol and polydiaryldialkylsiloxane  $\alpha,\omega$ -disilanol.

The alkyl groups preferably have from 1 to 4 carbon atoms and the aryl groups are preferably  
15 phenyl groups.

According to a particularly preferred embodiment of the present invention, the silicones used are chosen from polydimethylsiloxane  $\alpha,\omega$ -disilanol.

Such products are, for example, the non-ionic  
20 aqueous emulsion containing polydimethylsiloxane  $\alpha,\omega$ -disilanol sold under the name Siltech E-2170 by the company Siltech.

The silicone or silicones are present in the compositions in accordance with the invention in  
25 proportions generally of between 0.05 to 10% by weight, preferably from 0.1 to 3% by weight, with respect to the total weight of the composition.



The cosmetically acceptable continuous medium acting as vehicle in the compositions according to the invention is aqueous or aqueous/alcoholic and preferably composed of water or a mixture of water and  
5 of cosmetically acceptable solvents, such as monoalcohols, polyalcohols and glycol ethers, which can be used alone or as a mixture. More preferably still, the said vehicle is essentially composed of water.

The pH of the compositions according to the  
10 invention is generally between 2 and 9 and in particular between 3 and 8. It can be adjusted to the desired value by means of basifying or acidifying agents commonly used in cosmetics for this type of application.

15 When the composition according to the invention is pressurized in aerosol form, the aerosol comprises the composition described above, known as a dispensable, and at least one propellant, which can be chosen from volatile hydrocarbons, such as n-butane,  
20 propane, isobutane, pentane, chlorinated and/or fluorinated hydrocarbons and their mixtures. It is also possible to use, as propellant, carbon dioxide gas, nitrous oxide, dimethyl ether, nitrogen, compressed air and their mixtures.

25 In such a system, the concentration of propellant(s) is generally between 5 and 90% and preferably between 10 and 50% by weight with respect to

the total weight of the pressurized composition and more particularly between 15 and 35% by weight.

According to this preferred embodiment of the invention, the concentration of polymer particles is at  
5 least 3% by weight with respect to the weight of the pressurized composition (dispensable + propellant) and more preferably still between 5 and 35% by weight.

The compositions according to the invention (in the pressurized or non-pressurized state) can also  
10 comprise surface-active agents, preservatives, sequestering agents, softeners, fragrances, colorants, viscosity-modifying agents, foam-modifying agents, antifoaming agents, pearlescent agents, moisturizing agents, antidandruff agents, antiseborrhoeic agents,  
15 sunscreens, ceramides, proteins, vitamins, plasticizers, hydroxy acids, electrolytes, natural or synthetic oils and waxes, fatty alcohols, esters of polyhydric alcohols, mono-, di- or triglycerides, water-soluble polymers or mixtures of these various  
20 compounds.

Of course, a person skilled in the art will take care to choose the optional compound or compounds to be added to the composition according to the invention so that the advantageous properties  
25 intrinsically attached to the composition in accordance with the invention are not, or not substantially, detrimentally affected by the envisaged addition.

The compositions according to the invention are, for example, rinse-out or leave-in hair compositions and preferably leave-in hair compositions.

They are more particularly hair setting  
5 lotions, blow-drying lotions, fixing compositions (lacquers) and styling compositions. The lotions are packaged in various forms, in particular in vaporizers, pump-action sprays or in aerosol containers, in order to provide for application of the composition in  
10 vaporized form.

A further subject-matter of the invention is a process for the cosmetic treatment of keratinous substances, such as hair, characterized in that it consists in applying, to the keratinous substances, in  
15 particular by spraying or vaporization, a cosmetic composition as defined above and in then optionally rinsing with water, optionally after leaving for a period of time.

#### **EXAMPLE 1**

20 A composition A according to the invention was prepared and was compared with three compositions B, C and D not in accordance with the invention. The four compositions are packaged in pump-action sprays.

A panel of testers evaluated the  
25 disentangling, the softness and the feel of the hair after spraying 1 g of each of these compositions onto locks of natural hair weighing 5 g.

The grading ranges from 0 (very bad) to 5 (excellent).

The results are collated in the table below  
(AM means active material):

In g AM	A (Inven- tion)	B (compara- - tive)	C (compara- - tive)	D (compara- - tive)
Amerhold DR 25 <sup>(1)</sup>	10	10	10	10
Siltech E-2170 <sup>(2)</sup>	1	-	-	-
Q2-5220 <sup>(3)</sup>	-	1	-	-
L7230 <sup>(4)</sup>	-	-	1	-
Ethyl phthalate	1.5	1.5	1.5	1.5
Water, q.s. for	100	100	100	100
Disentangling	3	2	0	3
Softness	3	1.5	1	2
Feel	3	1.5	1	2

5

(1) Amerhold DR 25 from Amerchol: Ethyl acrylate/methyl methacrylate/methacrylic acid/acrylic acid copolymer as an aqueous dispersion comprising 25% by weight of the copolymer.

(2) Siltech E-2170 from Siltech: Non-ionic aqueous emulsion comprising 60% by weight of polydimethylsiloxane  $\alpha,\omega$ -disilanol (dimethiconol).

(3) Q2-5220 from Dow Corning: Polyoxyethylenated and  
5 polyoxypropylenated polydimethylsiloxane (dimethicone copolyol).

(4) L7270 from OSI: Polyoxyethylenated and polyoxypropylenated polydimethylsiloxane (dimethicone copolyol).

10           The aqueous emulsion containing polydimethylsiloxane  $\alpha,\omega$ -disilanol (A) makes it possible to improve the softness and the feel of the hair, whereas the dimethicone copolyol (B and C) causes a decline in these two properties.

15   **EXAMPLE 2**

          Two compositions A and B according to the invention were prepared and were compared with two compositions C and D not in accordance with the invention. The four compositions are packaged in pump-  
20   action sprays.

          A panel of testers evaluated the disentangling, the softness and the feel of the hair after spraying 1 g of each of these compositions on to locks of natural hair weighing 5 g.

25           The results are collated in the table below:

In g AM	A (Inven- tion)	B (Inven- tion)	C (compara- tive)	D (compara- tive)
Acudyne 255 <sup>(1)</sup>	10	10	10	10
Siltech E-2170 <sup>(2)</sup>	1	-	-	-
Q2-5220 <sup>(3)</sup>	-	-	1	-
TP511 A <sup>(4)</sup>	-	1	-	-
Ethyl phthalate	3	3	3	3
Water, q.s. for	100	100	100	100
Disentangling	4	4.5	2.5	4
Softness	3	3.5	2	2.5
Feel	3	3	2	2.5

(1) Acudyne 255 from Seppic: Hydroxyethyl methacrylate/methyl methacrylate/methacrylic acid/butyl acrylate copolymer as an aqueous dispersion comprising approximately 40% by weight of the copolymer.

(2) Siltech E-2170 from Siltech: Non-ionic aqueous emulsion containing 60% by weight of polydimethylsiloxane  $\alpha,\omega$ -disilanol (dimethiconol).

(3) Q2-5220 from Dow Corning: Polyoxyethylenated and polyoxypropylenated polydimethylsiloxane (dimethicone copolyol).

(4) TP511 A from OSI: Anionic aqueous emulsion containing 35% by weight of crosslinked polydimethylsiloxane  $\alpha,\omega$ -disilanol (dimethiconol).

The aqueous emulsions containing  
5 polydimethylsiloxane  $\alpha,\omega$ -disilanol (A and B) make it possible to improve the disentangling, the softness and the feel of the hair, whereas the dimethicone copolyol (B) causes a decline in these three properties.

**EXAMPLE 3**

10 A composition A according to the invention was prepared and was compared with two compositions B and C not in accordance with the invention. The three compositions were pressurized as aerosols.

A panel of testers evaluated the  
15 disentangling, the softness and the feel of the hair after spraying 2 g of each composition onto locks of natural hair weighing 5 g.

The results are collated in the table below (AM means active material):

In g AM	A (Invention)	B (comparative)	C (comparative)
Amerhold DR 25 <sup>(1)</sup>	15.4	15.4	15.4
Siltech E-2170 <sup>(2)</sup>	1.5	- -	-
Q2-5220 <sup>(3)</sup>	-	1.5	-
Ethyl phthalate	2.3	2.3	2.3
Water, q.s. for	100	100	100
Disentangling	2	1	2
Softness	2.5	1.5	2
Feel	2.5	1.5	2

(1) Amerhold DR 25 from Amerchol: Ethyl acrylate/methyl methacrylate/methacrylic acid/acrylic acid copolymer as  
 5 an aqueous dispersion comprising 25% by weight of the copolymer.

(2) Siltech E-2170 from Siltech: Non-ionic aqueous emulsion containing 60% by weight of polydimethylsiloxane  $\alpha,\omega$ -disilanol (dimethiconol).

10 (3) Q2-5220 from Dow Corning: Polyoxyethylenated and polyoxypropylenated polydimethylsiloxane (dimethicone copolyol).

The pressurization scheme was the following:



- The aqueous emulsion containing polydimethylsiloxane  $\alpha,\omega$ -disilanol makes it possible to improve the softness and the feel of the hair, whereas the dimethicone copolyol causes a decline in these two properties.

CLAIMS

1. Cosmetic composition, characterized in that it comprises, in a cosmetically acceptable medium, an aqueous dispersion of insoluble particles of polymer  
5 and a non-aminated silicone  $\alpha,\omega$ -disilanol emulsion.

2. Composition according to Claim 1, characterized in that the said aqueous dispersion results from the polymerization or from the copolymerization of monomers chosen from styrene,  
10 butadiene, ethylene, propylene, vinyltoluene, vinyl propionate, vinyl alcohol, acrylonitrile, chloroprene, vinyl acetate, urethanes, isoprene, isobutene, vinyl ether, vinylpyrrolidone, vinylimidazole and acrylic or methacrylic, maleic, crotonic or itaconic acids, their  
15 esters or their amides.

3. Composition according to either one of Claims 1 and 2, characterized in that the polymer of the aqueous dispersion is chosen from copolymers of alkyl acrylate, of alkyl methacrylate and of one or  
20 more ethylenic carboxylic acids or their salts having from 3 to 5 carbon atoms, the alkyl radicals having from 1 to 5 carbon atoms.

4. Composition according to any one of the preceding claims, characterized in that the polymer is  
25 chosen from ethyl acrylate/methyl methacrylate/methacrylic acid/acrylic acid copolymers.

5. Composition according to any one of Claims 1 to 3, characterized in that the polymer of the aqueous dispersion is chosen from hydroxyethyl methacrylate/methyl methacrylate/methacrylic acid/butyl acrylate copolymers, ethyl acrylate/methacrylic acid/t-butyl acrylate copolymers and methyl methacrylate/acrylic acid/butyl acrylate copolymers.

6. Composition according to any one of the preceding claims, characterized in that the concentration by weight of the polymer particles is between 1 and 35% with respect to the total weight of the composition.

7. Composition according to any one of the preceding claims, characterized in that the non-aminated silicone  $\alpha,\omega$ -disilanol(s) are present in the proportion of 0.05 to 10% by weight with respect to the total weight of the composition.

8. Composition according to Claim 7, characterized in that the silicone or silicones are present in the proportion of 0.1 to 3% by weight with respect to the total weight of the composition.

9. Composition according to any one of the preceding claims, characterized in that the silicone or silicones are chosen from polydialkylsiloxane  $\alpha,\omega$ -disilanol, polyalkylarylsiloxane  $\alpha,\omega$ -disilanol and polydiaryldialkylsiloxane  $\alpha,\omega$ -disilanol.

10. Composition according to Claim 9, characterized in that the silicone or silicones are chosen from polydimethylsiloxane  $\alpha,\omega$ -disilanol.

11. Composition according to any one of the preceding claims, characterized in that the compositions are hairsetting lotions or blow-drying lotions.

12. Composition pressurized in an aerosol, characterized in that it comprises a composition as defined in any one of Claims 1 to 10 and at least one propellant.

13. Composition according to Claim 12, characterized in that the propellant is chosen from volatile hydrocarbons, such as n-butane, propane, isobutane, pentane or chlorinated and/or fluorinated hydrocarbons, carbon dioxide gas, nitrous oxide, dimethyl ether, nitrogen, compressed air and their mixtures.

14. Composition according to either one of Claims 12 and 13, characterized in that the concentration by weight of the polymer particles is at least 3% by weight and preferably between 5 and 35% with respect to the total weight of the pressurized composition.

15. Composition according to any one of Claims 12 to 14, characterized in that the propellant is present in concentrations of between 5 and 90% by

weight with respect to the total weight of the pressurized composition.

16. Composition according to Claim 15, characterized in that the propellant is present in  
5 concentrations of between 10 and 50% by weight with respect to the total weight of the pressurized composition.

17. Process for the cosmetic treatment of keratinous substances, such as hair, characterized in  
10 that it consists in applying, to the keratinous substances, a cosmetic composition as defined in any one of Claims 1 to 16 and in then optionally rinsing with water, optionally after leaving for a period of time.

# Declaration and Power of Attorney for Patent Application

## Déclaration et Pouvoir pour Demand de Brevet

### French Language Declaration

En tant que l'inventeur nommé ci-après, je déclare par le présent acte que:

Mon domicile, mon adresse postale et ma nationalité sont ceux figurant ci-dessous à côté de mon nom.

Je crois être le premier inventeur original et unique (si un seul nom est mentionné ci-dessous), ou l'un des premiers co-inventeurs originaux (si plusieurs noms sont mentionnés ci-dessous) de l'objet revendiqué, pour lequel une demande de brevet a été déposée concernant l'invention intitulée

et dont la description est fournie ci-joint à moins que la case suivante n'ait été cochée:

☒ a été déposée le \_\_\_\_\_  
sous le numéro de demande des Etats-Unis ou le  
numéro de demande international PCT  
\_\_\_\_\_ et modifiée  
\_\_\_\_\_ (les cas échéant).

Je déclare par le présent acte avoir passé en revue et compris le contenu de la description ci-dessus, revendications comprises, telles que modifiées par toute modification dont il aura été fait référence ci-dessus.

Je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations.

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

COSMETIC COMPOSITION CONTAINING A POLYMER  
AQUEOUS DISPERSION AND A DISILANOL SILICONE  
EMULSION AND METHOD

the specification of which is attached hereto unless the following box is checked:

☒ was filed on August 18, 1998 as United States  
Application Number or PCT International  
Application Number PCT/FR98/01817 and was  
amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56.

**French Language Declaration**

Je revendique par le présent acte avoir la priorité étrangère, en vertu du Titre 35, § 119(a)-(d) ou § 365(b) du Code des Etats-Unis, sur toute demande étrangère de brevet ou certificat d'inventeur ou, en vertu du Titre 35, § 365(a) du même Code, sur toute demande internationale PCT désignant au moins un pays autre que les Etats-Unis et figurant ci-dessous et, en cochant la case, j'ai aussi indiqué ci-dessous toute demande étrangère de brevet, tout certificat d'inventeur ou toute demande internationale PCT ayant une date de dépôt précédant celle de la demande à propos de laquelle une priorité est revendiquée.

Prior foreign application(s)  
Demande(s) de brevet antérieure(s)

97/10,482                      France  
(Number)                      (Country)  
(Numéro)                      (Pays)

(Number)                      (Country)  
(Numéro)                      (Pays)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 119(e) du Code des Etats-Unis, de toute demande de brevet provisoire effectuée aux Etats-Unis et figurant ci-dessous.

(Application No.)                      (Filing Date)  
(N° de demande)                      (Date de dépôt)

(Application No.)                      (Filing Date)  
(N° de demande)                      (Date de dépôt)

Je revendique par le présent acte tout bénéfice, en vertu du Titre 35, § 120 du Code des Etats-Unis, de toute demande de brevet effectuée aux Etats-Unis, ou en vertu du Titre 35, § 365(c) du même Code, de toute demande internationale PCT désignant les Etats-Unis et figurant ci-dessous et, dans la mesure où l'objet de chacune des revendications de cette demande de brevet n'est pas divulgué dans la demande antérieure américaine ou internationale PCT, en vertu des dispositions du premier paragraphe du Titre 35, § 112 du Code des Etats-Unis, je reconnais devoir divulguer toute information pertinente à la brevetabilité, comme défini dans le Titre 37, § 1.56 du Code fédéral des réglementations, dont laquelle est devenue disponible entre la date de dépôt de la demande antérieure, et la date de dépôt de la demande nationale ou internationale PCT de la présente demande:

(Application No.)                      (Filing Date)  
(N° de demande)                      (Date de dépôt)

(Application No.)                      (Filing Date)  
(N° de demande)                      (Date de dépôt)

Je déclare par le présent acte que toute déclaration ci-incluse est, à ma connaissance, véridique et que toute déclaration formulée à partir de renseignements ou de suppositions est tenue pour véridique; et de plus, que toutes ces déclarations ont été formulées en sachant que toute fausse déclaration volontaire ou son équivalent est passible d'une amende ou d'une incarcération, ou des deux, en vertu de la Section 1001 du Titre 18 du Code des Etats-Unis, et que de telles déclarations volontairement fausses risquent de compromettre la validité de la demande de brevet ou du brevet délivré à partir de celle-ci.

I hereby claim foreign priority under Title 35, United States Code, § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International Application which designated at least one country other than the United States, listed below, and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed.

Priority Not Claimed  
Droit de priorité non revendiqué

19 August 1997                      ☐  
(Day/Month/Year Filed)  
(Jour/Mois/Anné de dépôt)

(Day/Month/Year Filed)                      ☐  
(Jour/Mois/Anné de dépôt)

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s), or § 365(c) of any PCT International Application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International Application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose any or all information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

(Status) (patented, pending, abandoned)  
(Status) (breveté, en cours d'examen, abandonné)

(Status) (patented, pending, abandoned)  
(Status) (breveté, en cours d'examen, abandonné)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

**French Language Declaration**

POUVOIRS: En tant que l'inventeur cité, je désigne par la présente l'(les) avocat(s) et/ou agent(s) suivant(s) pour qu'ils poursuive(nt) la procédure de cette demande de brevet et traite(nt) toute affaire s'y rapportant avec L'Office des brevets et des marques: (*mentionner le nom et le numéro d'enregistrement*).

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POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this patent application and transact all business in the Patent and Trademark Office connected therewith: (*list name and registration number*):

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